

What is claimed is:

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1. A method of forming a conductor comprising:
depositing an insulator over a planarized surface;
etching a trench having a depth on the insulator;
depositing a barrier layer on the insulator;
depositing a seed layer on the barrier layer;
removing the barrier layer and seed layer from selected areas of the insulator,
leaving a seed area; and
10 depositing a conductor on the seed area by a selective deposition process.
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2. The method of claim 1, wherein depositing the barrier layer on the insulator comprises:
depositing the barrier layer on the insulator by physical vapor-deposition.
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3. The method of claim 1, wherein etching a trench on the insulator comprises:
etching the trench to a depth of about equal to the depth of the insulator.
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4. A method of forming a conductor comprising:
depositing an oxide layer over a planarized surface;
etching a trench on the oxide layer;
depositing a barrier layer on the oxide layer;
depositing a seed layer on the barrier layer;
removing the barrier layer and seed layer from unused areas of the oxide
layer, leaving a seed area; and
depositing a conductor on the seed area.

5. The method of claim 4, wherein depositing an oxide layer over a planarized surface comprises:

depositing a silicon dioxide layer over the planarized surface.

6. The method of claim 4, wherein depositing an oxide layer over a planarized surface comprises:

depositing a fluorinated silicon oxide layer over the planarized surface.

7. The method of claim 4, wherein depositing a seed layer on the barrier layer comprises:

depositing the seed layer on the barrier layer by physical vapor-deposition.

~~8.~~ A method of forming a conductor comprising:

depositing a polymer layer over a planarized surface;

etching a trench on the polymer layer;

depositing a barrier layer on the polymer layer;

depositing a seed layer on the polymer layer;

removing the seed layer from selected areas of the polymer layer, leaving a

seed area; and

depositing a conductor on the seed area.

9. The method of claim 8, wherein depositing a polymer layer over a planarized surface comprises:

depositing a polyimide layer over the planarized surface.

10. The method of claim 8, wherein depositing a polymer layer over a planarized surface comprises:

depositing a foamed polymer layer over the planarized surface.

11. The method of claim 8, wherein depositing a seed layer on the polymer layer comprises:

depositing the seed layer on the polymer by physical vapor-deposition.

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12. A method of forming a conductor comprising:

depositing an oxide layer over a planarized surface;

etching a trench on the oxide layer;

depositing a barrier layer tantalum on the oxide layer;

depositing a seed layer selected from the group consisting of gold, silver, and

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copper on the oxide layer;

removing the barrier layer and seed layer from unused areas of the oxide

layer, leaving a seed area; and

depositing a conductor on the seed area.

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13. The method of claim 12, wherein depositing a barrier layer tantalum on the oxide layer comprises:

depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

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14. The method of claim 12, wherein depositing the barrier layer of tantalum and gold on the oxide layer comprises:

depositing the barrier layer by physical vapor-deposition.

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15. A method of forming a conductor comprising:

depositing an oxide layer over a planarized surface;

etching a trench on the oxide layer;

depositing a barrier layer tantalum on the oxide layer;

depositing a seed layer of gold on the oxide layer;

removing the barrier layer and seed layer from selected areas of the oxide layer, leaving a seed area; and depositing gold on the seed area.

5 16. The method of claim 15, wherein depositing a barrier layer tantalum on the oxide layer comprises:

depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

10 17. The method of claim 15, wherein depositing the barrier layer of tantalum and gold on the oxide layer comprises:

depositing the barrier layer by physical vapor-deposition.

15 18. The method of claim 15, wherein depositing gold on the seed area comprises: depositing gold on the seed area by electroless plating.

19. A method of forming a conductor comprising:

depositing an oxide layer over a planarized surface;

etching a trench on the oxide layer;

20 depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the oxide layer;

depositing a seed layer of silver on the oxide layer;

removing the barrier layer and seed layer from selected areas of the oxide layer, leaving a seed area; and

25 depositing silver on the seed area.

20. The method of claim 19, wherein depositing the barrier layer of titanium and silver on the oxide layer comprises:

depositing the barrier layer by physical vapor-deposition.

21. The method of claim 19, wherein depositing a seed layer of titanium and silver on the oxide layer comprises:

5 depositing the seed layer of titanium and silver to a depth of between fifty angstroms and two-thousand angstroms.

22. The method of claim 19, wherein depositing silver on the seed area comprises:

10 depositing silver on the seed area by electroless plating.

~~23.~~ A method of forming a conductor comprising:

depositing an oxide layer over a planarized surface;

etching a trench on the oxide layer;

15 depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the oxide layer;

depositing a seed layer of copper on the oxide layer;

removing the barrier layer and seed layer from selected areas or unused areas of the oxide layer, leaving a seed area; and

20 depositing aluminum on the seed area.

24. The method of claim 23, wherein depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the oxide layer comprises:

25 depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

25. The method of claim 23, wherein depositing the barrier layer of titanium and aluminum on the oxide layer comprises:

depositing the barrier layer by physical vapor-deposition.

26. The method of claim 23, wherein depositing copper on the seed area comprises:

5 depositing aluminum on the seed area by selective chemical vapor-deposition (CVD).

~~27.~~ A method of forming a conductor comprising:

depositing a polymer layer over a planarized surface;

10 etching a trench on the polymer layer;

depositing a barrier layer selected from the group consisting of titanium,
zirconium, and hafnium on the polymer layer;

depositing a seed layer selected from the group consisting of gold, silver, and
copper on the polymer layer;

15 removing the barrier layer and seed layer from selected areas of the polymer
layer, leaving a seed area; and

depositing a conductor on the seed area.

28. The method of claim 27, wherein depositing a barrier layer selected from the
20 group consisting of titanium, zirconium, and hafnium on the oxide layer comprises:

depositing the barrier layer to a depth of between fifty angstroms and one-
thousand angstroms.

29. The method of claim 27, wherein depositing a barrier layer selected from the
25 group consisting of titanium, zirconium, and hafnium on the polymer layer

comprises:

depositing the barrier layer by physical vapor-deposition.

30. A method of forming a conductor comprising:
depositing a polymer layer over a planarized surface;
etching a trench on the polymer layer;
depositing a barrier layer selected from the group consisting of titanium,
5 zirconium, and hafnium on the polymer layer;
depositing a seed layer of gold on the polymer layer;
removing the barrier layer and seed layer from selected areas or unused areas
of the polymer layer, leaving a seed area; and
depositing gold on the seed area.

10 31. The method of claim 30, wherein depositing a barrier layer selected from the
group consisting of titanium, zirconium, and hafnium on the oxide layer comprises:
depositing the barrier layer to a depth of between fifty angstroms and one-
thousand angstroms.

15 32. The method of claim 30, wherein depositing a barrier layer selected from the
group consisting of titanium, zirconium, and hafnium on the oxide layer comprises:
depositing the barrier layer by physical vapor-deposition.

20 33. The method of claim 30, wherein depositing gold on the seed area comprises:
depositing gold on the seed area by electroless plating.

25 34. A method of forming a conductor comprising:
depositing a polymer layer over a planarized surface;
etching a trench on the polymer layer;
depositing a barrier layer selected from the group consisting of titanium,
zirconium, and hafnium on the polymer layer;
depositing a seed layer of silver on the polymer layer;

removing the barrier layer and seed layer from selected areas of the polymer layer, leaving a seed area; and depositing silver on the seed area.

5 35. The method of claim 34, wherein depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the oxide layer comprises: depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

10 36. The method of claim 34, wherein depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the polymer layer comprises: depositing the barrier layer by physical vapor-deposition.

15 37. The method of claim 34, wherein depositing silver on the seed area comprises: depositing silver on the seed area by electroless plating.

20 ~~38.~~ A method of forming a conductor comprising:
depositing a polymer layer over a planarized surface;
etching a trench on the polymer layer;
depositing a barrier layer selected from the group consisting of titanium,
zirconium, and hafnium on the polymer layer;
depositing a seed layer of copper on the polymer layer;
25 removing the barrier layer and seed layer from unused areas of the polymer layer, leaving a seed area; and
depositing copper on the seed area.

39. The method of claim 38, wherein depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the polymer layer comprises:

5 depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

40. The method of claim 38, wherein depositing a barrier layer selected from the group consisting of titanium, zirconium, and hafnium on the polymer layer comprises:

10 depositing the barrier layer by physical vapor-deposition.

41. The method of claim 38, wherein depositing copper on the seed area comprises:

15 depositing copper on the seed area by electroless plating.

42. A method of forming a conductor comprising:
depositing an oxide layer over a planarized surface;
etching a trench on the oxide layer;
depositing a barrier layer selected from the group consisting of zirconium and
20 titanium on the oxide layer;
depositing a seed layer of aluminum-copper on the oxide layer;
removing the barrier layer and seed layer from selected areas of the oxide
layer, leaving a seed area; and
depositing a conductor on the seed area.

25 43. The method of claim 42, wherein depositing a barrier layer selected from the group consisting of zirconium and titanium on the oxide layer comprises:

depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

44. The method of claim 42, wherein depositing the barrier layer selected from the group consisting of zirconium and titanium on the oxide layer comprises:
depositing the barrier layer by physical vapor-deposition.

45. A method of forming a conductor comprising:
depositing an oxide layer over a planarized surface;
etching a trench on the oxide layer;
depositing a barrier layer of zirconium on the oxide layer;
depositing a seed layer of aluminum-copper on the oxide layer;
removing the barrier layer and seed layer from selected areas of the oxide layer, leaving a seed area; and
depositing aluminum on the seed area.

46. The method of claim 45, wherein depositing a barrier layer of zirconium on the oxide layer comprises:
depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

47. The method of claim 45, wherein depositing a barrier layer of zirconium on the oxide layer comprises:
depositing the barrier layer by physical vapor-deposition.

48. The method of claim 45, wherein depositing aluminum on the seed area comprises:
depositing aluminum on the seed area by chemical vapor-deposition.

49. The method of claim 45, wherein depositing aluminum on the seed area comprises:

depositing an amount of aluminum sufficient to fill the trench.

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~~50. A method of forming a conductor comprising:~~

~~depositing an oxide layer over a planarized surface;~~

~~etching a trench on the oxide layer;~~

~~depositing a barrier layer of titanium on the oxide layer;~~

~~depositing a seed layer of aluminum-copper on the oxide layer;~~

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~~removing the barrier layer and seed layer from selected areas or unused areas~~

~~of the oxide layer, leaving a seed area; and~~

~~depositing aluminum on the seed area.~~

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51. The method of claim 50, wherein depositing a barrier layer of titanium on the oxide layer comprises:

depositing the barrier layer to a depth of between fifty angstroms and one-thousand angstroms.

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52. The method of claim 50, wherein depositing a barrier layer of titanium on the oxide layer comprises:

depositing the barrier layer by physical vapor-deposition.

53. The method of claim 50, wherein depositing aluminum on the seed area comprises:

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depositing aluminum on the seed area by chemical vapor-deposition.

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~~54. The method of claim 50, wherein depositing a seed layer of titanium on the oxide layer comprises:~~

depositing the seed layer of titanium on the oxide layer by chemical vapor-deposition.

55. The method of claim 50, wherein depositing aluminum on the seed area comprises:

depositing an amount of aluminum sufficient to fill the trench.

~~56.~~ A method of forming a conductor comprising:

depositing an oxide layer over a planarized surface;

etching a trench having a top on the oxide layer;

depositing a barrier layer of tantalum nitride on the oxide layer;

depositing a seed layer of copper on the tantalum nitride layer;

removing the barrier layer and seed layer from selected areas of the oxide layer;

depositing a conductor on the seed area leaving a seed area; and

depositing a layer of tantalum nitride above the conductor.

57. The method of claim 56, wherein depositing a barrier layer of tantalum nitride on the oxide layer comprises:

depositing approximately one-hundred angstroms of tantalum nitride.

58. The method of claim 56, wherein depositing a seed layer of copper on the tantalum nitride layer comprises:

depositing approximately five-hundred angstroms of copper on the tantalum nitride layer.

59. The method of claim 56, wherein depositing a barrier layer of tantalum nitride on the oxide layer comprises:

depositing the barrier layer of tantalum nitride by a non-anisotropic deposition technique.

5 60. The method of claim 56, wherein depositing a seed layer of copper on the barrier layer of tantalum nitride comprises:

depositing the seed layer of copper on the tantalum nitride layer by a non-anisotropic deposition technique.

10 61. The method of claim 56, wherein depositing a barrier layer of tantalum nitride on the oxide layer comprises:

depositing the barrier layer of tantalum nitride to a depth of between fifty angstroms and one-thousand angstroms.

15 62. The method of claim 56, wherein depositing a barrier layer of tantalum nitride on the oxide layer comprises:

depositing the barrier layer of tantalum nitride on the oxide layer by chemical vapor-deposition.

20 63. The method of claim 56, wherein depositing a seed layer of copper on the layer of tantalum nitride comprises:

depositing the seed layer copper on the barrier layer to a depth of approximately five-hundred angstroms below the top of the trench.

25 64. The method of claim 56, wherein depositing a barrier layer of tantalum nitride above the conductor comprises:

depositing the barrier layer of tantalum nitride above the conductor to a depth of approximate five-hundred angstroms.

65. The method of claim 56, wherein depositing an oxide layer over a planarized surface comprises:

depositing a silicon dioxide layer over the planarized surface.

5 66. The method of claim 56, wherein depositing an oxide layer over a planarized surface comprises:

depositing a fluorinated silicon oxide layer over the planarized surface.

10 67. A method of forming a conductor comprising:

depositing an oxide layer over a planarized surface;

etching a trench having a top on the oxide layer;

depositing a barrier layer of tantalum nitride on the oxide layer;

depositing a seed layer of copper on the oxide layer;

removing the barrier layer and seed layer from selected areas of the oxide

15 layer, leaving a seed area;

depositing a layer of copper on the seed area; and

depositing a layer of tantalum nitride above the layer of copper.

20 68. The method of claim 67, wherein depositing a barrier layer of tantalum nitride on the oxide layer comprises:

depositing approximately one-hundred angstroms of tantalum nitride.

69. The method of claim 67, wherein depositing a seed layer of copper on the oxide layer comprises:

25 depositing approximately five-hundred angstroms of copper on the oxide layer.

76. The method of claim 67, wherein depositing an oxide layer over a planarized surface comprises:

depositing a silicon dioxide layer over the planarized surface.

5 77. The method of claim 67, wherein depositing an oxide layer over a planarized surface comprises:

depositing a fluorinated silicon oxide layer over the planarized surface.

10 78. A connective structure comprising:

an insulator above a planarized surface, the insulator having a trench, the

trench having a trench surface;

a barrier layer above the trench surface;

a seed layer above the barrier layer; and

a conductor above the seed layer.

15 79. The connective structure of claim 78, wherein the insulator has a depth, the trench has a depth and the depth of the trench is about equal to the depth of the insulator.

20 80. A connective structure comprising:

an oxide layer above the planarized surface, the oxide layer having a trench,

the trench having a trench surface;

a barrier layer above the trench surface;

a seed layer above the barrier layer; and

25 a conductor above the seed layer.

81. The connective structure of claim 80, wherein the oxide layer is a silicon dioxide layer.

82. The connective structure of claim 80, wherein the oxide layer is a fluorinated silicon oxide layer.

5 ~~83.~~ A connective structure comprising:
a polymer layer above the planarized surface, the polymer layer having a
trench, the trench having a trench surface;
a barrier layer above the trench surface;
a seed layer above the barrier layer; and
10 a conductor above the seed layer.

84. The connective structure of claim 83, wherein the polymer layer is a polyimide layer.

15 85. The connective structure of claim 83, wherein the polymer layer is a foamed polymer layer.

20 ~~86.~~ A connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface;
a seed layer selected from the group consisting of gold, silver, and copper
above the barrier layer; and
a conductor above the seed layer.

25 87. The connective structure of claim 86, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

5 88. A connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface;
a seed layer of gold above the barrier layer; and
a gold layer above the seed layer.

10 89. The connective structure of claim 88, wherein the barrier layer has a depth of
between fifty angstroms and one-thousand angstroms.

15 90. A connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface; and
a gold layer above the barrier layer.

20 91. A connective structure comprising *ga*
an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface;
a seed layer of silver above the barrier layer; and
a silver layer above the barrier layer.

25 92. The connective structure of claim 91, wherein the barrier layer has a depth of
between fifty angstroms and one-thousand angstroms.

93. A connective structure comprising:

an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface; and
a silver layer above the barrier layer.

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94. A connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface;
a seed layer of copper above the barrier layer; and
a copper layer above the seed layer.

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95. The connective structure of claim 94, wherein the barrier layer has a depth of
between fifty angstroms and one-thousand angstroms.

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96. A connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench,
the trench having a trench surface;
a barrier layer tantalum above the trench surface; and
a copper layer above the barrier layer.

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97. A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a
trench, the trench having a trench surface;
a barrier layer selected from the group consisting of titanium, zirconium, and
hafnium above the trench surface;
a seed layer selected from the group consisting of gold, silver, and copper
above the barrier layer; and

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a conductor layer above the seed layer.

98. The connective structure of claim 97, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

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99. A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a trench, the trench having a trench surface;
a barrier layer selected from the group consisting of titanium, zirconium, and hafnium above the trench surface;
a seed layer of gold above the barrier layer; and
a gold layer above the seed layer.

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100. The connective structure of claim 99, wherein the barrier layer has a depth of between fifty and one-thousand angstroms.

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101. A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a trench, the trench having a trench surface;
a barrier layer selected from the group consisting of titanium, zirconium, and hafnium above the trench surface; and
a gold layer above the barrier layer.

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102. A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a trench, the trench having a trench surface;
a barrier layer selected from the group consisting of titanium, zirconium, and hafnium above the trench surface;

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a seed layer of silver above the barrier layer; and
a silver layer above the seed layer.

103. The connective structure of claim 102, wherein the barrier layer has a depth
of between fifty angstroms and one-thousand angstroms.

~~104.~~ A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a
trench, the trench having a trench surface;
a barrier layer selected from the group consisting of titanium, zirconium, and
hafnium above the trench surface; and
a silver layer above the barrier layer.

~~105.~~ A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a
trench, the trench having a trench surface;
a barrier layer selected from the group consisting of titanium, zirconium, and
hafnium above the trench surface;
a seed layer of copper above the barrier layer; and
a copper layer above the seed layer.

106. The connective structure of claim 105, wherein the barrier layer has a depth
of between fifty angstroms and one-thousand angstroms.

~~107.~~ A connective structure comprising:
a polymer layer above a planarized surface, the polymer layer having a
trench, the trench having a trench surface;

113. A connective structure comprising:
an oxide layer above a planarized surface, the oxide layer having a trench, the
trench having a trench surface;
a barrier layer of titanium above the trench surface;
5 a seed layer of aluminum-copper above the barrier layer; and
an aluminum layer above the seed layer.

114. The connective structure of claim 113, wherein the barrier layer has a depth o
between fifty angstroms and one-thousand angstroms.

115. The connective structure of claim 113, where the aluminum layer fills the
trench.

116. A connective structure comprising:
an oxide layer above a planarized surface, the oxide layer having a trench, the
trench having a trench surface;
a barrier layer of tantalum nitride above the trench surface;
a seed layer of copper above the barrier layer;
an conductor layer above the seed layer; and
20 a tantalum nitride layer above the conductor layer.

117. The connective structure of claim 116, wherein the depth of the barrier layer
is approximately one-hundred angstroms.

118. The connective structure of claim 116, wherein the seed layer is
approximately five-hundred angstroms of copper.

119. The connective structure of claim 116, wherein the barrier layer is between fifty angstroms and one-thousand angstroms.

120. The connective structure of claim 116, wherein the trench has a top and the seed layer is approximately five-hundred angstroms below the top of the trench.

121. The connective structure of claim 116, wherein the barrier layer has a depth of approximately five-hundred angstroms.

122. The connective structure of claim 116, wherein the oxide layer is a silicon dioxide layer.

123. The connective structure of claim 116, wherein the oxide layer is a fluorinated silicon oxide layer.

124. A connective structure comprising:
an oxide layer above a planarized surface, the oxide layer having a trench, the trench having a trench surface;
a barrier layer of tantalum nitride above the trench surface;
a seed layer of copper above the barrier layer;
a copper layer above the seed layer; and
a tantalum nitride layer above the copper layer.

125. The connective structure of claim 124, wherein the barrier layer has a depth of approximately one-hundred angstroms.

126. The connective structure of claim 124, wherein the seed layer has a depth of approximately five-hundred angstroms.

127. The connective structure of claim 124, wherein the barrier layer has a depth of between approximately fifty angstroms and one-thousand angstroms.

128. The connective structure of claim 124, wherein the trench has a top and the copper is approximately five-hundred angstroms below the top of the trench.

129. The connective structure of claim 124, wherein the tantalum nitride above the copper is deposited to a depth of approximately five-hundred angstroms.

130. The connective structure of claim 124, wherein the oxide layer is a silicon dioxide layer.

131. The connective structure of claim 124, wherein the oxide layer is a fluorinated silicon oxide layer

132. A computer system comprising:
a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure comprising:
an insulator above a planarized surface, the insulator having a trench,
the trench having a trench surface;
a barrier layer above the trench surface;
a seed layer above the barrier layer; and
a conductor above the seed layer.

133. The computer system of claim 132, wherein the insulator has a depth, the trench has a depth and the depth of the trench is about equal to the depth of the insulator.

5 134. A computer system comprising:
a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure
comprising:
10 an oxide layer above the planarized surface, the oxide layer having a
trench, the trench having a trench surface;
a barrier layer above the trench surface;
a seed layer above the barrier layer; and
a conductor above the seed layer.

15 135. The computer system of claim 134, wherein the oxide layer is a silicon
dioxide layer.

20 136. The computer system of claim 134, wherein the oxide layer is a fluorinated
silicon oxide layer.

25 137. A computer system comprising:
a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure
comprising:
a polymer layer above the planarized surface, the polymer layer
having a trench, the trench having a trench surface;

a barrier layer above the trench surface;
a seed layer above the barrier layer; and
a conductor above the seed layer.

5 138. The computer system of claim 137, wherein the polymer layer is a polyimide layer.

139. The computer system of claim 137, wherein the polymer layer is a foamed polymer layer.

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~~140.~~ A computer system comprising:
a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure
15 comprising:
an oxide layer above the planarized surface, the oxide layer having a
trench, the trench having a trench surface;
a barrier layer tantalum above the trench surface;
a seed layer selected from the group consisting of gold, silver, and
20 copper above the barrier layer; and
a conductor above the seed layer.

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141. The computer system of claim 140, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

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~~142.~~ A computer system comprising:
a processor;
a device coupled to the processor; and

a connective structure coupled to the device, the connective structure comprising:

an oxide layer above the planarized surface, the oxide layer having a trench, the trench having a trench surface;
a barrier layer tantalum above the trench surface;
a seed layer of gold above the barrier layer; and
a gold layer above the seed layer.

143. The computer system of claim 142, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

~~144.~~ A computer system comprising:

a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench, the trench having a trench surface;
a barrier layer tantalum above the trench surface; and
a gold layer above the barrier layer.

~~145.~~ A computer system comprising:

a processor;
a device coupled to the processor; and
a connective structure coupled to the device, and the connective structure comprising:
an oxide layer above the planarized surface, the oxide layer having a trench, the trench having a trench surface;

a barrier layer tantalum above the trench surface;
a seed layer of silver above the barrier layer; and
a silver layer above the barrier layer.

5 146. The computer system of claim 145, wherein the barrier layer has a depth of
between fifty angstroms and one-thousand angstroms.

10 ~~147.~~ A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure
comprising:

an oxide layer above the planarized surface, the oxide layer having a
trench, the trench having a trench surface;

15 a barrier layer tantalum above the trench surface; and

a silver layer above the barrier layer.

20 ~~148.~~ A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure
comprising:

an oxide layer above the planarized surface, the oxide layer having a
trench, the trench having a trench surface;

25 a barrier layer tantalum above the trench surface;

a seed layer of copper above the barrier layer; and

a copper layer above the seed layer.

149. The computer system of claim 148, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

150. A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure

comprising:

an oxide layer above the planarized surface, the oxide layer having a

trench, the trench having a trench surface;

a barrier layer tantalum above the trench surface; and

a copper layer above the barrier layer.

151. A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure

comprising:

a polymer layer above a planarized surface, the polymer layer having

a trench, the trench having a trench surface;

a barrier layer tantalum above the trench surface;

a seed layer selected from the group consisting of gold, silver, and

copper above the barrier layer; and

a conductor layer above the seed layer.

152. The computer system of claim 151, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure

comprising:

a polymer layer above a planarized surface, the polymer layer having

a trench, the trench having a trench surface;

a barrier layer selected from the group consisting of titanium,
zirconium, and hafnium above the trench surface;

a seed layer of silver above the barrier layer; and

a silver layer above the seed layer.

157. The computer system of claim 156, wherein the barrier layer has a depth of
between fifty angstroms and one-thousand angstroms.

158. A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure

comprising:

a polymer layer above a planarized surface, the polymer layer having

a trench, the trench having a trench surface;

a barrier layer selected from the group consisting of titanium,
zirconium, and hafnium above the trench surface; and

a silver layer above the barrier layer.

159. A computer system comprising:

a processor;

a device coupled to the processor; and

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a connective structure coupled to the device, the connective structure comprising:

a polymer layer above a planarized surface, the polymer layer having

a trench, the trench having a trench surface;

a barrier layer selected from the group consisting of titanium,

zirconium, and hafnium above the trench surface;

a seed layer of copper above the barrier layer; and

a copper layer above the seed layer.

160. The computer system of claim 159, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

161. A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure comprising:

a polymer layer above a planarized surface, the polymer layer having

a trench, the trench having a trench surface;

a barrier layer selected from the group consisting of titanium,

zirconium, and hafnium above the trench surface;

a seed layer of copper above the barrier layer; and

a copper layer above the seed layer.

162. A computer system comprising:

a processor;

a device coupled to the processor; and

a connective structure coupled to the device, the connective structure comprising:

an oxide layer above a planarized surface, the oxide layer having a trench, the trench having a trench surface;

5 a barrier layer selected from the group consisting of zirconium and titanium above the trench surface;

a seed layer of aluminum-copper above the barrier layer; and

a conductor above the seed layer.

10 163. The computer system of claim 162, wherein the barrier layer has a depth of between fifty angstroms and one-thousand angstroms.

164. A computer system comprising:

a processor;

15 a device coupled to the processor; and

a connective structure coupled to the device, and the connective structure comprising:

an oxide layer above a planarized surface, the oxide layer having a trench, the trench having a trench surface;

20 a barrier layer selected of zirconium above the trench surface;

a seed layer of aluminum-copper above the barrier layer; and

an aluminum layer above the seed layer.

25 165. The computer system of claim 164, wherein the barrier layer has a depth of between fifty and one-thousand angstroms.

166. The computer system of claim 164, wherein the aluminum layer fills the trench.

167. A computer system comprising:
a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure
5 comprising:
an oxide layer above a planarized surface, the oxide layer having a
trench, the trench having a trench surface;
a barrier layer of titanium above the trench surface;
a seed layer of aluminum-copper above the barrier layer; and
10 an aluminum layer above the seed layer.

168. The computer system of claim 167, wherein the barrier layer has a depth o
between fifty angstroms and one-thousand angstroms.

15 169. The computer system of claim 167, where the aluminum layer fills the trench.

170. A computer system comprising:
a processor;
a device coupled to the processor; and
20 a connective structure coupled to the device, the connective structure
comprising:
an oxide layer above a planarized surface, the oxide layer having a
trench, the trench having a trench surface;
a barrier layer of tantalum nitride above the trench surface;
25 a seed layer of copper above the barrier layer;
an conductor layer above the seed layer; and
a tantalum nitride layer above the conductor layer.

171. The computer system of claim 170, wherein the depth of the barrier layer is approximately one-hundred angstroms.

172. The computer system of claim 170, wherein the seed layer is approximately five-hundred angstroms of copper.

173. The computer system of claim 170, wherein the barrier layer is between fifty angstroms and one-thousand angstroms.

174. The computer system of claim 170, wherein the trench has a top and the seed layer is approximately five-hundred angstroms below the top of the trench.

175. The computer system of claim 170, wherein the barrier layer has a depth of approximately five-hundred angstroms.

176. The computer system of claim 170, wherein the oxide layer is a silicon dioxide layer.

177. The computer system of claim 170, wherein the oxide layer is a fluorinated silicon oxide layer.

178. A computer system comprising:
a processor;
a device coupled to the processor; and
a connective structure coupled to the device, the connective structure comprising:
an oxide layer above a planarized surface, the oxide layer having a trench, the trench having a trench surface;

a barrier layer of tantalum nitride above the trench surface;
a seed layer of copper above the barrier layer;
a copper layer above the seed layer; and
a tantalum nitride layer above the copper layer.

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179. The computer system of claim 178, wherein the barrier layer has a depth of approximately one-hundred angstroms.

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180. The computer system of claim 178, wherein the seed layer has a depth of approximately five-hundred angstroms.

181. The computer system of claim 178, wherein the barrier layer has a depth of between approximately fifty angstroms and one-thousand angstroms.

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182. The computer system of claim 178, wherein the trench has a top and the copper is approximately five-hundred angstroms below the top of the trench.

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183. The computer system of claim 178, wherein the tantalum nitride above the copper is deposited to a depth of approximately five-hundred angstroms.

184. The computer system of claim 178, wherein the oxide layer is a silicon dioxide layer.

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185. The computer system of claim 178, wherein the oxide layer is a fluorinated silicon oxide layer.